

- 30 Furthermore, a network element providing important functions for the MMS is the so-called Multimedia Messaging Service Centre (MMSC). The MMSC contains a store-and-forward function which stores the multimedia messages in a database and tries to send them to the

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recipient mobile station (MS). For this, the MMSC is informed automatically when the MS has become reachable.

Multimedia messages usually have a validity period. The messages are removed from the database of the MMSC in which they are stored if they cannot be delivered to the MS during the validity period.

Regarding the delivery of the messages, the mobile terminated multimedia messages have two delivery options: The multimedia message is sent automatically to the recipient MS, or the recipient is informed of the arrived multimedia message using SMS, for example. The notification contains at least the message size and the message identification. Then, the user can explicitly request the network to the multimedia message to the MS. The choice between the delivery options can be based on the message size or the message content type. For example, it can be set that messages less than 1000 kB are delivered automatically to the MS, or that text and voice messages are delivered automatically to the MS.

When sending messages, it is often not always useful to transmit a message to a recipient MS. For example, in case such a message contains tourist information concerning a particular town, it is not useful to send this message to a user, who has left this town.

This is in particular a problem in case the message is a multimedia message which is in general considerably large. Thus, if such a message is transmitted although it is not required, the corresponding network is affected to an undesirable heavy load.

SUMMARY OF THE INVENTION

Therefore, the object underlying the invention resides in removing the above drawbacks of the prior art.

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This object is solved by a method according to claim 1. In particular, according to the invention, a method for delivering messages in a network comprising at least one terminal device is provided. The method comprises the

10 steps of generating a message, setting a condition for receiving the message, deciding whether the message is to be received by a terminal device on the basis of the condition, and transmitting the message to the terminal device on the basis of the result of the deciding step.

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Alternatively, the above object is solved by a network system for delivering messages in a network as defined in claim 12. The network system comprises a message delivering device, and a terminal device. The message

20 delivering device comprises a deciding means adapted to decide whether a message is to be received by the terminal device on the basis of a condition for receiving the message. Furthermore, the message delivering device comprises a transmitting means adapted to transmit the

25 message on the basis of the deciding result of the deciding means to the terminal device.

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Thus, by the method and the system according to the invention, a condition can be set for delivering a message to a terminal. That is, if this condition is not met, the message is not delivered. By this measure, the load on the network is reduced since no messages are transmitted which are not required.

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- In addition, the invention proposes a report delivery condition setting device according to claim 24 for setting a condition for receiving a delivery report. The report delivery condition setting device comprises a
- 5 setting means for setting a condition for receiving the message by a terminal device, and a supplying means for supplying the message including the condition to a message delivering device.
- 10 Moreover, the invention proposes a message delivering device for delivering a message in a network according to claim 29, wherein for the message a condition for receiving the message by a terminal device is set. The message delivering device comprises a deciding means
- 15 adapted to decide whether the message is to be received by the terminal device on the basis of the condition, and a transmitting means adapted to transmit the message to the terminal device on the basis of the deciding result of the deciding means.
- 20 Furthermore, the invention proposes a terminal device for receiving a message for which a condition for receiving the message is set for use in network according to claim 35. The terminal device comprises a receiving means for
- 25 receiving the message, a judging means for judging whether a delivery report is to be transmitted or not in response to receiving the message, and a transmitting means for transmitting the delivery report in case the judging means judges that the delivery report is to be
- 30 transmitted.

Further advantageous developments are set out in the dependent claims.

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category. The state of the recipient may be enquired by the deciding means. The category condition of the message may have been set at the originator side automatically by the network, e.g., in order to prevent advertisement type of messaging without permission.

The information regarding the condition for receiving a message can be included in an optional field of the message. Hence, the information necessary to judge whether the deciding step is required can easily be detected within the message.

Furthermore, the terminal device can be determined as being inactive or busy in case it is decided that the condition is not met. By this measure, such a terminal device can be handled in the same way as if the terminal is not available in the moment. That is, no special procedure for handling messages which do not meet the condition is required. Furthermore, it can be decided whether delivering of the message should be tried later again or whether the message should not be delivered at all, as it is possible for a normal communication (e.g., phone call or fax transmission).

A delivery report can be sent to the originator of the message, i.e., the user of the multimedia message generator 1. However, it can be arranged that the delivery report can only be sent if the originator of the message is permitted to receive the delivery report. By this measure, it is taken care of the privacy of a user. That is, by this measure the user can avoid that someone is able to track his location without his consent.

The originators which are permitted to receive delivery reports from the particular terminal can be stored in a

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list in a database. Thus, the user does not have to decide for each reception of a message whether a delivery report should be transmitted or not.

- 5 Alternatively, a group of users can be defined which may receive delivery reports. That is, if the decision as to whether an originator is permitted to receive delivery reports, a detection whether the originator is a member of the group is sufficient. This measure simplifies the
10 decision.

Furthermore, in order to identify an originator as a member of such a group of users, a group identifier can be added or attached to the message. Hence, an easy
15 detection is possible.

The message can be a multimedia message. In this case, the above advantages are considerably important since multimedia messages are usually large. Therefore, the
20 load on the network due to messages not required can be reduced considerably.

Furthermore, the network can be a mobile network and the terminal device can be a mobile station. Especially in
25 case of a mobile network, the invention is advantageously since a mobile network usually has only limited capacities for transmitting large messages.

30 BRIEF DESCRIPTION OF THE DRAWINGS

The present invention will be more readily understood with reference to the accompanying drawings in which:

Fig. 1 shows a structure of a network system according to an embodiment,

Fig. 2 shows a flow chart of a procedure for delivering multimedia messages according to the embodiment of the invention, and

Fig. 3 shows a flow chart of a procedure for handling a delivery report according to the embodiment.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

In the following, a preferred embodiment of the invention is described in more detail with reference to the accompanying drawings.

Fig. 1 shows a general structure of a network system according to the embodiment. According to this embodiment, multimedia messages are delivered via a mobile network. The network system comprises a multimedia message generator 1, a Multimedia Messaging Services Centre MMSC 2 as an example for a message delivering device, a mobile network 3 and a mobile station MS 4 as an example for a terminal device, which is adapted to receive and reproduce multimedia messages.

It is to be noted that for simplifying the description and the drawings only the network elements are shown which are important for the invention. Thus, network elements like base stations BS, base station controllers BSC, Mobile Services Switching Centres MSC and the like are omitted.

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multimedia message. The multimedia message containing the information regarding the location is transmitted by a message transmitter 12 to the MMSC 2.

- 5 The MMSC 2 is a network element necessary for delivering of multimedia messages, as already described in the introductory part. According to this embodiment, the MMSC is expanded by functions for delivering the messages in which a condition for receiving can be set. For
10 simplifying the description, only these additional means are described and shown in Fig. 1.

The MMSC 2 comprises a multimedia message delivery
deciding means 21 which investigates the multimedia
15 message received from the multimedia message generator 1. This is effected by checking the optional field of the multimedia message. That is, the multimedia message delivery deciding means 21 extracts the location
condition information. The multimedia message delivery
20 deciding means 21 knows from the normal address block of the multimedia message to which mobile station the multimedia message is to be transmitted.

Thus, the current location of the mobile station MS 4 has
25 to be detected. According to this embodiment, the deciding means 21, i.e., the MMSC, accesses a Mobile Location Centre MLC 5 which provides the required location information regarding the MS 4. It is to be noted that this network element or a similar element is
30 usually provided in all mobile networks.

Thus, the multimedia message delivery deciding means 21 decides based on the location condition for the message and the location information received from the MLC 5

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whether the condition is fulfilled, i.e., whether the MS 4 is located in the requested area or not.

In case the condition is not met, a failure returning
5 means 22 of the MMSC 2 sends a message back to the multimedia generator 1. In particular, this message is the same message as if the MS 4 would be not available. Hence, for the message generator 1, the MS 4 is considered as not being reachable.

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In case the condition is met, the multimedia message is transmitted to the MS 4 via the mobile network 3 by a message transmitter 23.

15 The multimedia message is received by a multimedia message receiver 41 of the MS 4. The multimedia message is then reproduced by using a message reproducing means 42 which can be a combination of a display and a loudspeaker, for example.

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Furthermore, the MS 4 comprises a delivery report handler 43. This handler 43 serves to judge whether a delivery report should be transmitted or not. Namely, the user of the generator 1 can select that a delivery report should
25 be transmitted back to him in response to reception of the multimedia message by the MS 4. However, by this measure the location of a user of the MS 4 could be traced. The user might not wish that the message originator can get aware of his location, and by
30 providing the handler 43 sending of undesired delivery reports can be avoided.

According to this embodiment, the delivery report handler 43 accesses an originator database 44 in which the user
35 of the MS 4 has stored a list of originators which may

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receive delivery reports. As an alternative, such a list of originators can also be stored on the network, i.e., in a suitable network element, e.g., the MMSC. Furthermore, a group of users which are permitted to receive delivery reports can be defined. In this case, a group identifier can be added or attached to the message such that the delivery report handler 43 has only to check whether a group identifier is present in the message (e.g., in a corresponding optional field) and whether members of this group are permitted to receive delivery reports. Group identifiers can also be stored in the database 44.

In case the originator of the current multimedia message is permitted to receive delivery reports, the delivery report is transmitted by a delivery report transmitter 45 via the mobile network 3 to the message generator 1.

The method according to this embodiment is summarised by referring to the flow charts shown in Figs. 2 and 3.

Steps S1 and S4 are carried out by the message generator. That is, a message is generated (step S1). Then, the condition for receiving the multimedia message is set (step S2). In the present embodiment, the condition is a location condition. The receiving condition information is set in an optional field of the multimedia message (step S3) and the multimedia message is supplied to the MMSC 2 (step S4).

The MMSC 2 accesses the receiving condition information of the multimedia message (step S5) and decides whether the receiving condition is met or not (step S6). In case the receiving condition is not met (NO in step S6), a message that the MS 4 is inactive or busy is sent to the

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multimedia message generator 1. In case the receiving condition is met (YES in step S8), the multimedia message is actually transmitted via the mobile network 3 to the MS 4.

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In the MS 4, the multimedia message is reproduced. In response to receiving the multimedia message, a delivery report handle procedure is carried out (step S9) which is described with reference to the flowchart shown in Fig.

10 3. This procedure is carried out by the delivery report
handler 43.

First, in step S91 it is determined whether a delivery report is requested for the current multimedia message.

15 In case no delivery report is requested (NO in step S91),
the procedure is immediately ended. In case a delivery
report is requested (YES in step S91), the originator
database 44 is accessed (step S92). Then, it is
determined whether the originator of the current
20 multimedia message is permitted to receive delivery
reports in step S93. That is, if the originator of the
present multimedia message could not be found in the
database 44, it is determined that the present originator
is not allowed to receive delivery reports (NO in step
25 S93), and the procedure is ended without transmitting a
delivery report.

On the other hand, if the present originator could be found in the database 44, it is determined that the present originator may receive delivery reports (YES in step S93), and a delivery report is transmitted to the originator (step S94).

According to a modification of the embodiment, the MS 4
35 does not comprise an originator database 44. Instead, the

delivery report handler 43 comprises an operation panel (not shown) by which the user of the MS 4 can input whether he wishes transmitting of the delivery report of the current multimedia message or not. By this measure, the user has to decide regarding the delivery report for every multimedia message. However, this measure has the advantage that the structure of the MS 4 can be simplified and its costs can be reduced since no database is required.

The above description and accompanying drawings only illustrate the present invention by way of example. Thus, the embodiment of the invention and the modification thereof may vary within the scope of the attached claims.

For example, the embodiment and the modification thereof can be combined. That is, in case the originator of the current multimedia message could not be found in the database 44, the MS 4 can be arranged such that the user has to input whether he wishes to transmit the delivery report nevertheless. Furthermore, the user can be asked whether he wishes to store such a new originator in the database 44.

As a further alternative, a default value can be provided in the MS. Such a default value is used for delivery report sending and can indicate, always send/always confirm/never send for example. Thus, the user of the MS has a further possibility to control sending of the delivery report in an easy manner.

Moreover, according to the above described embodiment, the message delivering device is included in the MMSC which is a general control element for MMS (Multimedia Messaging Services). However, this device can also be a

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separate network element or can be included in other network elements, when appropriate.

In addition, the multimedia message generator can also be
5 a part of a mobile station and the connection between the message generator and the MMSC (multimedia message delivering device) can be provided by the mobile network. Also, the terminal device 4 is not limited to a mobile station, this could be also a fixed station.

10 Moreover, according to the above described embodiment, the condition setting means 11 has been described as a part of the multimedia message generator 1. However, the condition setting means can also be an independent
15 network element. For example, the messages can be generated in a another network under a different administration, whereas the condition is set in the present network, for example in a proxy server or the like.

20 Finally, the condition described above is not limited to the location condition. For example, also certain information regarding the user of the addressed terminal can be used to set conditions. In this case, the
25 multimedia message delivery deciding means 21 has to be correspondingly modified such that it can access to corresponding databases, for example to the HLR or VLR or more sophisticated databases.

30 Alternatively, it can be arranged that a user can decide whether he desires to receive a message or not in advance. For example, an originator of the messages can be listed in a database of the terminal device, i.e., the mobile station. Hence, if a user of a terminal device is
35 always interested to receive messages from a particular

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originator, this originator can be included in such a database. Then, receiving of the message can easily be permitted. Such originators can also be included in a group of originators. Thus, this group can be included in
5 the database.

Furthermore, the recipient of the messages can be in a specific state with respect to willingness to receive messages in general or messages of given type or
10 category. The state of the recipient may be enquired by the deciding means. The category condition of the message may have been set at the originator side automatically by the network, e.g., in order to prevent advertisement type of messaging without permission.

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